HEWLETT-PACKARD COMPANY
Intellectual Property Administration
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PATENT APPLICATION

ATTORNEY DOCKET NO. 100203850-1

IN THE
UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor(s):	Doron SHAKED et al.	Confirmation No.:	5895
Application No.:	10/675,943	Examiner:	Sean T. Motsinger
Filing Date:	October 2, 2003	Group Art Unit:	2624

Title: ROBUST RECURSIVE ENVELOPE OPERATORS FOR FAST RETINEX-TYPE PROCESSING

Mail Stop Appeal Brief - Patents
Commissioner For Patents
PO Box 1450
Alexandria, VA 22313-1450

TRANSMITTAL OF REPLY BRIEF

Transmitted herewith is the Reply Brief with respect to the Examiner's Answer mailed on October 15, 2009 .

This Reply Brief is being filed pursuant to 37 CFR 1.193(b) within two months of the date of the Examiner's Answer.

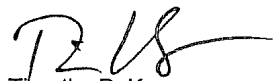
(Note: Extensions of time are not allowed under 37 CFR 1.136(a))

(Note: Failure to file a Reply Brief will result in dismissal of the Appeal as to the claims made subject to an expressly stated new ground rejection.)

No fee is required for filing of this Reply Brief.

If any fees are required please charge Deposit Account 08-2025.

Respectfully submitted,
Doron SHAKED et al.

By: 
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REPLY BRIEF - PATENTS

Sir:

The Appellant respectfully submit this Reply Brief in response to the Examiner's Answer mailed on October 15, 2009, and thus, this Reply Brief is timely filed within two months of the Examiner's Answer.

TABLE OF CONTENTS

(1) Status of Claims

Claims 10-14 and 16-24 are allowed. Claims 2-7 and 9 are objected to as being dependent upon a rejected base claim, but are otherwise allowable.

Claims 8 and 15 have been canceled without prejudice or disclaimer of the subject matter contained therein.

Claim 1 stands rejected and is at issue on this appeal.

(2) Grounds of Rejection to be Reviewed on Appeal

A. Whether claim 1 was properly rejected under 35 U.S.C. §102(b) as being anticipated by Ogata et al. "Dynamic range compression based on illumination compensation" IEEE Trans. On Consumer Electronics Vol. 47, pp548-558, August 2001, (hereinafter "Ogata").

(3) Arguments

A. The rejection of claim 1 under 35 U.S.C. §102(b) as being anticipated by Ogata should be reversed

In the Response to Argument section of the Examiner's Answer, the Examiner "disagrees with applicant's argument that an IIR filter must produce different results when a flipped or rotated (i.e. if a flipped image is input to the filter the output would be different then flipped version of a non flipped output)[*stet*]." Instead, the Examiner argues, "[a]ll that is required to produce an IIR filter is to produce an infinite impulse response that is the response of the filter to an impulse input is infinite in length (i.e. is non-zero to infinity). The Examiner further argues that equation (1) in Ogata discloses an infinite impulse response filter. These arguments are respectfully traversed for at least the following reasons.

Initially, it should be noted that independent claim 1 recites that the code for Retinex-type processing includes code for cascaded recursive filtering, which includes code for infinite impulse response (IIR) filtering. As is generally known with IIR filters, IIR filtering is a recursive operation applied pixel by pixel in a particular order (usually raster). One result of which is that IIR filtering results in different outputs when applied on an image and a flipped or rotated version of the image.

In contrast to the IIR filtering being applied pixel by pixel in a particular order as represented in independent claim 1, Ogata uses a nonlinear filter to the multiple scale representation of an input image. *Ogata*, page 282, second column, last paragraph ("Each image

for each different scale is produced through a down-sampling operation at scale-proportional rate.").

To further illustrate the distinction between independent claim 1 of the present invention and the discussion contained in Ogata, the Appellants previously discussed the impacts that the different filtering operations have on images and flipped or rotated versions of the images. More particularly, one result of the operation performed in independent claim 1 is that IIR filtering results in different outputs when applied on an image and a flipped or rotated version of the image. In contrast, use of the recursive operations disclosed in Ogata on an image and a flipped or rotated version of that image will result in an output of the flipped or rotated version being a flipped or rotated version of the output of the image because the nonlinear filter in Ogata is used between multiple scale representations of an input image.

In addition, the Examiner's assertions on page 5, lines 3-7 of the Examiner's Answer that the impulse function is defined as $L_k(x,y) = \{0$ if $K<0$, 1 if $K=0$, and 0 if $K>0\}$, and that application of this equation to L_k from –infinity to infinity results in $M_k = 0$ for $k<0$ and $M_k = w(x,y)*a$ for $K=0$ is confusing and does not appear to have proper basis in the disclosure contained in Ogata. Instead, Ogata discloses that $L_k(x,y)$ is an output "from the k-th scale in the multiscale representation of the input image, which is recursively integrated to the outputs from the smaller scales as shown in Eq. (1)." *Ogata*, page 282, second column, last paragraph. Thus, it is not at all clear as to how or where the Examiner arrived at the equation $L_k(x,y) = \{0$ if $K<0$, 1 if $K=0$, and 0 if $K>0\}$. It is also not at all clear as to how the Examiner arrived at the conclusion that L_k could even range from –infinity to infinity because it is not at all clear as to

whether the output at different scales in a multi-scale representation of an image could even reasonably be construed as ranging from –infinity to infinity. Moreover, therefore, it is not at all clear as to how the Examiner concluded from eq. (1) of Ogata that $M_k = 0$ for $k<0$ and $M_k = w(x,y)*a$ for $K=0$.

Instead, there appears to be no justification in Ogata that a k-th scale equal to 0 would result in the output $L_k(x,y)$ to be equal to 1 or any other particular number. In addition, even if $L_k(x,y)$ is equal to 0 in eq. (1) of Ogata, $M_k(x,y)$ would not equal 0, but instead would be equal to $(1-w(x,y))M_{k-1}(x,y)$ since only the first term in eq. (1) would be equal to 0.

Accordingly, the basis upon which the Examiner concludes that Ogata discloses an IIR filter is incorrect. The Examiner has thus failed to establish that Ogata discloses an IIR filter as claimed in independent claim 1. For at least the reasons presented above, Ogata fails to anticipate independent claim 1. The remainder of the Examiner's arguments are based upon the improper assertion that Ogata discloses an IIR filter and are thus also incorrect.

The Board is therefore respectfully requested to reverse the rejection of independent claim 1 as being anticipated by Ogata.

(4) Conclusion

For at least the reasons given above, the rejection of claim 1 is improper. The Appellant therefore respectfully requests that the Board of Patent Appeals and Interferences reverse the Examiner's decision rejecting claim 1 and to direct the Examiner to pass the case to issue.

Please grant any required extensions of time and charge any fees due in connection with this Reply Brief to deposit account no. 08-2025.

Respectfully submitted,

Dated: December 15, 2009 By

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